37. The belt of Claim 28 further comprising a source of suction adjacent the at least one aperture.

38. A belt comprising (a) a polishing surface for polishing a workpiece in a chemical mechanical linear polishing system and (b) a side opposite the polishing surface, the belt forming an endless loop, an improvement comprising at least one aperture from the polishing surface through the side opposite the polishing surface so that the aperture is substantially free of a window, the aperture positioned on the belt to allow monitoring of the workpiece through the aperture; and

a fluid platen adjacent the side opposite, the fluid platen operable to provide humidified air pressure.--

REMARKS

Claims 1, 6 and 7 have been rewritten. The attached Appendix indicates the changes, with additions underlined and deletions indicated by brackets.

In the Office Action, the Examiner rejected claims 1-7 pursuant to 35 U.S.C. § 103(a) as being unpatentable over Dudovicz et al. (WO 99/06182) in view of Birang (EP 0 738 561 A1). Applicants respectfully traverse the rejection and request reconsideration of claims 1-7, including independent claim 1.

Independent claim 1 requires that a window free aperture from the polishing surface to the opposite side is positioned on the belt to allow monitoring of the workpiece through the aperture. As noted by the Examiner, Dudovicz et al. do not suggest this limitation.

The Examiner relies upon Birang for this limitation, but Birang suggests that any aperture for monitoring include a window. A window is provided for monitoring (col. 3, lines 3-12). Figure 2 generally shows the alignment of the aperture vis-à-vis the laser interferometer and the wafer, but no window is shown for the purposes of the drawing. A more detailed view of the aperture is shown in Figs. 3A-C, which depict various window embodiments (e.g., quartz insert, pad without backing layer, and polyurethane plug)(see col. 9, lines 41-50). The specification provides the following rationale for covering the aperture with window material (specifically, the quartz insert):

> "The interface between the platen 16 and the insert 38 is sealed, so that the portion of the chemical slurry 40 finding its way between the wafer 14 and insert 38 cannot leak through to the bottom of the platen 16." (Col. 9, lines 47-50)

This same rationale would apply to the other window embodiments in Figs. 3B and 3C, which also have the effect of sealing off the hole so that slurry cannot leak through. When the problem of signal integration is discussed, the provided solutions relate to windows:

> "One solution to this problem is to extend the platen hole along the direction of rotation of the platen. In other words, the window structure 66' (i.e. insert, pad, or plug) would take on the shape of an arc, as shown in Fig. 7.
>
> * * *
>
> Alternatively, the window could remain the same, but the laser interferometer would be mounted to the rotating platen directly below the window." (col. 13, lines 24-27 and 29-32).

At columns 27-28, an alternative window embodiment is discussed. The general description of the alleged invention even includes a window (column 2, line 45 to column 3, line 29). Finally, all of the claims that call for an aperture also call for a window (claims 1-20 and 39-42). If Dudovicz et al. were modified by utilizing the aperture to monitor the wafer based on the teachings of Birang, the aperture would include a window.

Even if col. 9 and Figure 2 of Birang were to be construed as disclosures of a windowless aperture with the belt of Dudovicz et al., the disclosure is nonenabling. The specification of Birang provides no guidance as to how to solve the leaking slurry problem (discussed at col. 9, lines 47-50) without a window. Birang provides no guidance of any sort as to how one would employ a windowless aperture for monitoring on a linear polishing tool. Birang teaches using a window for monitoring.

A person of ordinary skill in the art would not have combined the monitoring teaching of Birang with the belt of Dudovicz et al. Birang is directed to rotating polishers (col. 1, lines 36-39 and 54-55; col. 2, lines 52-57). Conversely, Dudovicz et al. is directed to linear belt polishers. Different structures and operation result from the difference in polishers, so the monitor of Birang would not have been combined with the belt of Dudovicz et al. The window based monitor of Birang would not have been

combined with the purposeless and uncharacterized holes of Dudovicz et al. (see Response And Amendment dated July 25, 2001).

Neither of Birang nor Dudovicz et al. suggest additional limitations of claim 1. For example, neither reference discloses a notch or trigger aperture.

Claims 2-7 depend from claim 1, so are allowable for the reasons discussed above. Further limitations of dependent claims 2-7 are not obvious from the suggestions of Dudovicz et al. nor Birang. The general suggestion of holes by Dudovicz et al., especially with no purpose or other characteristic disclosed, and the window based monitoring of Birang would not have suggested: centering the windowless aperture as claimed in claim 2; three windowless apertures as claimed in claims 4 and 5; and a notch or trigger aperture positioned relative to the aperture as claimed in claims 6 and 7.

New claims 24-38 are allowable for one or more of the reasons discussed above. Additional limitations of new claims 24-38 are not suggested by either of Dudovicz et al. nor Birang.

CONCLUSION

Applicants respectfully submit that all of the pending claims are in condition for allowance and seeks early allowance thereof. If for any reason, the Examiner is unable to allow the application in the next Office Action and believes that an interview would be helpful to resolve any remaining issues, he is respectfully requested to contact the undersigned attorneys at (312) 321-4200.

Respectfully submitted,

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APPENDIX

1. (amended) A belt comprising (a) a polishing surface for polishing a workpiece in a linear chemical mechanical [linear] polishing system and (b) a side opposite the polishing surface, the belt forming an endless loop, an improvement comprising at least one aperture from the polishing surface through the side opposite the polishing surface so that the aperture is substantially free of a window, the aperture positioned on the belt to allow monitoring of the workpiece through the aperture;

one of a notch along a first edge of the belt and trigger hole, the notch or trigger hole positioned relative to the aperture;

a monitor positioned to sense the workpiece through the aperture; and

a sensor positioned such that passing of the trigger hole or notch activates the monitor.

6. (amended) The belt of Claim 1 [further comprising] wherein the one of the trigger hole and the notch comprises a notch along a first edge of the belt, the notch positioned relative to the aperture.

7. (amended) The belt of Claim 1 [further comprising] wherein the one of the trigger hole and the notch comprises a trigger [aperture] hole positioned relative to the aperture.